ABSTRACT OF THE DISCLOSURE

A system includes a fuel cell, and a heat exchanger coupled to the fuel cell. The heat exchanger is arranged upstream of the fuel cell in a flow of gaseous reactants for the fuel cell for preheating gaseous reactants and downstream of the fuel cell in a flow of at least a portion of the waste gas from the fuel cell. The heat exchanger is directly integrated with the fuel cell so that there is a direct flow transition from the heat exchanger to the flow cell.